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Bulletins 152-168 OK - RBS. 4/10/42

163 = 23rd/24th Ann. Rpt 1905/1906 ? OK - RBS 4/16/42

Experiment Station Library.

Class ~~639.73~~

Number ~~A153~~ Cop. 3

Volume ~~Bulletins 152-168~~

Source

Received June 1915 (Neal)

Cost

Accession No. 3417 Ex. S.

Bulletin 158 April, 1912

NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF CHEMISTRY

The Feeding-Stuffs Inspection

For 1912

MADE FOR THE
STATE BOARD OF AGRICULTURE

BY B. E. CURRY AND T. O. SMITH

NEW HAMPSHIRE COLLEGE
OF
AGRICULTURE AND MECHANIC ARTS
DURHAM, N. H.

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS.

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The bulletins of the Experiment Station are published at irregular intervals and are sent *free* to all residents of New Hampshire requesting them.

FEEDING-STUFFS INSPECTION FOR 1912.

The samples for the 1912 feeding-stuffs inspection were taken by Messrs. H. B. Tuttle and J. E. Robinson. In all, two hundred and seventy-two samples were obtained exclusive of duplicates and brands not requiring a license. The inspectors were unable to secure samples of about fifty brands which had been licensed. In many instances, failure to find these brands was due to the fact that the supplies were often at a minimum during the time the samples were taken.

Of the number of samples taken two hundred and sixty-seven have been analyzed for protein and fat. At the last session of the state legislature the feeding-stuffs law was amended to include an inspection of the wheat feeds. The law follows:

AN ACT TO REGULATE THE SALE OF CONCENTRATED COMMERCIAL FEEDING-STUFFS.

SECTION 1. Every manufacturer, company, or person, who shall sell, offer, or expose for sale or for distribution in this state any concentrated commercial feeding-stuff used for feeding farm live stock, shall furnish with each car or other amount shipped in bulk and shall affix to every package of such feeding-stuff, in a conspicuous place on the outside thereof, a plainly printed statement clearly and truly certifying the number of net pounds in the package sold or offered for sale, the name or trademark under which the article is sold, the name of the manufacturer or shipper, the place of manufacture, the place of business, and a chemical analysis stating the percentages it contains of crude protein, allowing one per centum of nitrogen to equal six and one-fourth per centum of protein, of crude fat, and of crude fibre, both con-

stituents to be determined by the methods prescribed by the association of official agricultural chemists. Whenever any feeding-stuff is sold at retail in bulk or in packages belonging to the purchaser, the agent or dealer, upon request of the purchaser, shall furnish to him the certified statement named in this section.

Sect. 2. The term "concentrated commercial feeding-stuffs," as used in this act, shall include linseed meals, cottonseed meals, pea meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried brewer's grains, malt sprouts, hominy feeds, cerealine feeds, rice meals, oat feeds, corn and oat chops, wheat, rye and buckwheat bran and middlings, ground beef, or fish scraps, mixed feeds and all other materials of similar nature; but shall not include hays and straws, the whole seeds nor the unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn.

Sect. 3. Before any manufacturer, company, or person shall sell, offer, or expose for sale in this state any concentrated commercial feeding-stuffs, he or they shall, for each and every feeding-stuff bearing a distinguishing name or trademark, file annually during the month of December with the secretary of the board of agriculture a certified copy of the statement specified in the preceding section, said certified copy to be accompanied, when the secretary shall so request, by a sealed glass jar or bottle containing at least one pound of the feeding-stuff to be sold or offered for sale, and the company or person furnishing said sample shall thereupon make affidavit that said sample corresponds within reasonable limits to the feeding-stuff which it represents, in the percentage of protein and fat which it contains.

Sect. 4. Each manufacturer, importer, agent, or seller of any concentrated commercial feeding-stuffs, shall pay annually during the month of December to the secretary

of the board of agriculture an analysis fee of fifteen dollars, for each brand offered for sale within the state. Whenever a manufacturer, importer, agent, or seller of concentrated commercial feeding-stuff desires at any time to sell such material and has not paid the analysis fee therefor in the preceding month of December, as required by this section, he shall pay the analysis fee prescribed herein before making any such sale. The amount of analysis fees received by said secretary pursuant to the provisions of this section shall be paid by him to the treasurer of the state of New Hampshire. The treasurer of the state of New Hampshire shall pay from such amount when duly approved the moneys required for the expense incurred in making the inspection required by this act and enforcing the provisions thereof. The secretary of the board of agriculture shall report biennially to the legislature the amount received pursuant to this act, and the expense incurred for salaries, laboratory expenses, chemical supplies, traveling expenses, printing, and other necessary matters. Whenever the manufacturer, importer, or shipper of concentrated commercial feeding-stuff shall have filed the statement required by section 1 of this act and paid the analysis fee as prescribed in this section, no agent or seller of such manufacturer, importer, or shipper shall be required to file such statement or pay such fee.

Sect. 5. The secretary of the board of agriculture shall annually cause to be analyzed at the New Hampshire College Agricultural Experiment Station, at least one sample, to be taken in the manner hereinafter prescribed, of every concentrated commercial feeding-stuff sold or offered for sale under the provisions of this act. Said secretary shall cause a sample to be taken, not exceeding two pounds in weight, for said analysis, from any lot or package of such commercial feeding-stuff which may be in the possession of any manufacturer, importer, agent, or

dealer in this state; but said sample shall be drawn in the presence of the parties in interest, or their representatives, and taken from a parcel or a number of packages, which shall not be less than ten per centum of the whole lot sampled, and shall be thoroughly mixed, and then divided into two equal samples, and placed in glass vials and carefully sealed and a label placed on each stating the name of the party from whose stock the sample was drawn and the time and place of drawing, and said label shall also be signed by the person taking the sample, and by the party or parties in interest or their representatives at the drawing and sealing of said samples; one of said duplicate samples shall be retained by the secretary and the other by the party whose stock was sampled, and the sample or samples retained by the secretary shall be for comparison with the certified statement named in section 3 of this act. The result of the analysis of the sample or samples so procured, together with such additional information as circumstances advise, shall be published in reports or bulletins from time to time.

Sect. 6. Any manufacturer, importer, or person who shall sell, offer, or expose for sale or for distribution in this state any concentrated commercial feeding-stuff, without complying with the requirements of this act, or any feeding-stuff which contains substantially a smaller percentage of the constituents than are certified to be contained, shall, on conviction in a court of competent jurisdiction, be fined not more than one hundred dollars for the first offense, and not more than two hundred dollars for each subsequent offense.

Sect. 7. Any person who shall adulterate any kind of meal or ground grain with milling or manufacturing offals, or any other substance whatever, for the purpose of sale, unless the true composition, mixture, or adulteration thereof is plainly marked or indicated upon the package containing the same or in which it is offered for sale; or

any person who knowingly sells, or offers for sale, any meal or ground grain which has been so adulterated unless the true composition, mixture, or adulteration is plainly marked or indicated upon the package containing the same, or in which it is offered for sale, shall be fined not less than twenty-five or more than one-hundred dollars for each offense.

SECT. 8. Whenever said secretary becomes cognizant of the violation of any of the provisions of this act he shall prosecute the party or parties thus reported; but it shall be the duty of said secretary, upon thus ascertaining any violation of this act, to forthwith notify the manufacturer, importer, or dealer in writing, and give him not less than thirty days thereafter in which to comply with the requirements of this article; but there shall be no prosecution in relation to the quality of any concentrated commercial feeding-stuff if the same shall be found substantially equivalent to the certified statement named in section 3 of this article.

SECT. 9. This act shall take effect December first, nineteen hundred and one.

Consumers and manufacturers of high-grade feeds should welcome a more thorough inspection than our law now requires. It is not enough to know that a feed contains so much crude protein, so much crude fat and so much carbohydrates. There is a vast difference in the digestibility of proteins, fats and carbohydrates, depending on whether they are in the form of low-grade or high-grade products. Therefore the consumer should have a means of knowing the source of the ingredients which go into a feeding-stuff.

There are found on the market a large number of low-grade compounded feeds. The New Hampshire farmer can afford to buy only the high-grade feeds. The freight and overhead charges are as high on the low-grade com-

pounded feeds as on the high-grade feeds, and the selling charges are probably higher. It is a notable fact that neither the market nor the demands of the consumer, differentiate at all closely between the value of a low-grade and a high-grade product. For instance, we find a sample of Sterling Mixed Feed, manufactured in Indiana, which was offered on our market at $1.60 per one hundred pounds. A straight bran or mixed feed might have been bought at the same price. The Sterling Mixed Feed consisted of a mixture of wheat by-products, ground corn cobs and a small amount of corn. In general appearance the feed does not differ much from bran. However, the cobs and other material are present in sufficient quantity to reduce the protein almost thirty per cent., and increase the crude fibre almost fifty per cent. The consumer of such a feed pays a long price for what he gets. It is not necessary to use a microscope to determine the constituents of such a feed. Also, this feed was sold under a misleading name. A *mixed feed* should consist only of wheat by-products. A feed which contains ground corn cobs can not qualify as a mixed feed.

The writers do not wish in any way to injure the business of the man who sells high-grade compounded feeds and there are excellent feeds of this sort on the market. The manufacturer of high-grade feeds should have no hesitancy in guaranteeing the ingredients from which the feed is compounded. Such a proceeding would be a good advertisement.

Such low-grade by-products as oat hulls, screenings, cleaned screenings, corn cob meal, flax refuse, oat clips, straw, etc., should be consumed near the point of manufacture where freight charges are low. Our New Hampshire consumers can *not afford* to *pay freight charges* and *selling commissions* on such material. No business-like farmer will pay grain prices, or nearly so, for by-products no more valuable for feeding purposes than straw or hay

or other roughage which can be grown on any New Hampshire farm. While we have singled out one particular feed here in this discussion a number of others would have served our purpose equally as well.

A chemical analysis of a feed shows the amount of crude protein, crude fat and crude fibre, but a chemical analysis does not differentiate between the sources from which these constituents come. All of the feeding-stuffs carry these in greater or less quantities. The chemical analysis tells only in what quantities.

The amount of crude fibre indicates to the careful buyer something of the nature of the feeding-stuff. Ground oats carry on the average about nine per cent. crude fibre. Ground corn carries about two per cent. It is at once evident from these data that a mixture of equal parts of corn and oats should not carry more than six per cent. crude fibre and under no conditions more than nine per cent, otherwise the feed would become suspicious. Ground corn and cob carries about six per cent. fibre. Ground oats mixed with corn and cobs could not carry over nine per cent. fibre.

The Pennsylvania law prohibits the use of rice hulls, peanut hulls, weed seeds, and also ground corn cobs except in exclusively corn feed. Oat hulls, flax plant refuse, elevator chaff, cottonseed hulls, ground corn stalks, ground corn cobs, in exclusively corn feeds may be used providing that the crude fibre in such feeds does not exceed nine per cent.

Gluten meal is a high-grade product and belongs to the same class as cottonseed meal as a source of protein. Brewers' grains carry a high amount of crude fibre but these also carry a high percentage of protein and constitute a high-grade feed. From this it is evident that a feed should not be condemned because of a high amount of crude fibre unless the source of the fibre is known to be present as an adulterant. The crude fibre in brewers'

grains cannot be eliminated. On the other hand oat hulls and cottonseed hulls are in evidence in large amounts only when they have been purposely added.

One brand of cottonseed product sold as Cremo cottonseed meal was found with a guarantee of twenty-two per cent. protein. The writers doubt if this could be classed as a cottonseed meal. Cottonseed meal is classed as good, prime and choice, with the percentages of protein thirty-six, thirty-eight and one half, and forty-one per cent., respectively. This sample carried a very high amount of crude fibre. The guaranteed carbohydrates were not greatly different from the amount in high-grade cottonseed meal. Unless such a product is offered at a reasonable price it is doubtful if it should be purchased at all. The consumer as well as the distributor should bear in mind that Cremo Brand does not qualify as cottonseed meal in the standard classification of cottonseed meals. The consumer should also bear in mind that he is paying freight and other charges on a considerable amount of crude fibre, the feeding value of which is unknown and very low at best.

A large number of poultry feeds are found on the market. The poultry business must be very profitable, otherwise the poultry men could not afford to pay the prices these feeds bring. Without questioning the quality of these feeds, it is safe to say that no well informed business poultryman could be induced at this time to buy a feed analyzing ten per cent. protein and three per cent. fat at $40 per ton. However, our consumers are doing this every day. Consumers do not seem to realize that the price of these feeds is fixed largely by the most expensive ingredient regardless of the amount present. When one realizes the prices that our consumers are paying for some of the compounded feeds the argument in favor ot home-mixing from high-grade standard by-products or whole grain meals becomes very forceful. A great deal

is said about the economy of buying raw materials for the home-mixing of fertilizers. However much may be said in favor of such a practice, the saving is small when compared to the aggregate losses encountered in the careless purchase of feeds. Our consumers are paying almost as much for the poor feeds as for the good ones. Freight, commissions, and overhead charges tend to bring the selling price of low-grade feeds near the selling price of better feeds. These factors are just as important in their bearing on the cost of feeding-stuffs as on the cost of fertilizers. Another year it is hoped that a determination of the crude fibre and also a microscopical examination of all compounded feeds can be made. In the case of compounded feeds, the microscopical examination is as important as the determinations of fat and protein.

The ultimate value of a feeding-stuff depends on that portion of it which the animal can digest and use to promote growth, to form heat and energy and to provide for the natural waste in the body. It is obvious, therefore, that the value of a feed depends upon its proper use. Care and intelligence should be exercised in the use of concentrates. Otherwise the animal receives an unbalanced ration and a portion of the feed passes through the system in an undigested condition and therefore unassimilated and is wasted. Concentrates should be fed in connection with roughage in order to obtain the best results. Not all of the best feeding-stuffs can be digested and taken into the body of the animal. A portion passes through the alimentary canal as waste. The amount which can be digested and assimilated is known as digestible portion and is generally expressed in percentage of digestible nutrients. The percentage of digestible nutrients varies with the different feeding-stuffs. When high-grade products are properly fed, a large percentage of the proteins and carbohydrates are digestible.

As a matter of reference and a means of getting at the

relative value of the more common feeding-stuffs the following tables are given.

The first table shows the average percentage composition of feeding-stuffs as taken from Henry's, Jordan's and Lindsay's Compilations. The second table, taken from the same source, shows the average percentage of digestible nutrients.

TABLE No. 1.

AVERAGE COMPOSITION OF FEEDING-STUFFS—PER CENT.

(Henry's, Jordan's and Lindsay's Compilations.)

	Dry Matter	Water	Ash	Protein	Fat	Carbohydrates Nitrogen Free Extract Fiber	Nitrogen Free Extract
Corn	89.4	10.6	1.5	10.3	5.0	2.2	70.4
Corn Meal	85.0	15.0	1.4	9.2	3.8	1.9	68.7
Corn Bran	90.6	9.4	1.2	11.2	6.2	11.9	60.1
Corn Chops	87.2	12.3	1.5	9.8	4.4	2.0	69.5
Hominy Meal	90.4	9.6	2.7	10.5	8.0	4.9	64.3
Gluten Feed	90.8	9.2	2.0	25.0	3.5	6.8	53.5
Corn and Cob Meal	84.9	15.1	1.5	8.5	3.5	6.6	64.8
Corn Cob	89.3	10.7	1.4	2.4	0.5	30.1	54.9
Oats	89.6	10.4	3.2	11.4	4.8	10.8	59.4
Oat Middlings	91.2	8.8	4.5	16.2	6.9	7.1	56.5
Oat Feed	93.0	7.0	5.3	8.0	2.9	21.5	55.3
Wheat	89.5	10.5	1.8	11.9	2.1	1.8	71.9
Wheat Bran	88.1	11.9	5.8	15.4	4.0	9.0	53.9
Wheat Middlings (shorts)	88.8	11.2	4.4	16.9	5.1	6.2	56.2
Flour Middlings	90.0	10.0	3.2	19.2	4.8	3.2	59.6
Shipstuff	89.1	10.9	5.6	16.3	4.6	7.5	55.1
Barley	89.2	10.8	2.5	12.0	1.8	4.2	68.7
Buckwheat	86.6	13.4	2.0	10.8	2.4	11.7	59.7
Buckwheat Feed	88.4	11.6	3.9	18.3	4.9	19.2	42.1
Brewers' Dried Grains	91.3	8.7	3.7	25.0	6.7	13.6	42.3
Distillers' Dried Grains	92.4	7.6	2.0	31.2	12.2	11.6	35.4
Malt Sprouts	90.5	9.5	6.1	26.3	1.6	11.6	44.9
Flax Seed	90.8	9.2	4.3	22.6	33.7	7.1	23.2
Linseed Meal (O. proc's)	90.2	9.8	5.5	33.9	7.8	7.3	35.7
Linseed Meal (N. proc's)	91.0	9.0	5.5	37.5	2.0	8.9	36.4
Cotton Seed	89.7	10.3	3.5	18.4	19.9	23.2	24.7
Cotton Seed Meal	93.0	7.0	6.6	45.3	10.2	6.3	24.6
Alfalfa Hay	91.6	8.4	7.4	14.3	2.2	25.0	42.7
Dried Beet Pulp	91.6	8.4	4.5	8.1	0.7	17.5	60.8
Meat Scraps	89.3	10.7	4.1	71.2	13.7	....	0.3
Molasses Feed	89.6	10.4	6.5	17.1	2.9	11.9	51.2

TABLE No. 2.

AVERAGE DIGESTIBLE NUTRIENTS OF FEEDS—PER CENT.

(Henry's, Jordan's and Lindsay's Compilations.)

	Dry Matter	Protein	Fat	Carbohydrates Nitrogen Free Extract	Fiber
Corn	81.35	7.83	4.30	65.47	1.28
Corn Meal	74.8	6.07	3.46	63.29	....
Corn Bran	63.42	6.05	4.74	45.68	6.78
Corn Chops	78.00	6.95	3.88	64.38	1.25
Hominy Meal	74.13	6.83	7.36	57.23	3.28
Gluten Feed	79.0	21.25	2.87	47.62	5.17
Corn and Cob Meal	67.07	4.42	2.94	57.02	2.97
Corn Cob	52.67	0.4	0.25	32.94	19.57
Oats	62.72	8.78	4.27	45.74	3.35
Oat Middlings	82.08	13.12	6.49	54.24	3.48
Oat Feed	37.20	5.20	2.61	23.23	1.88
Wheat	....	10.2	1.7	69.2	
Wheat Bran	58.15	11.86	2.5	38.27	3.69
Wheat Middlings (shorts)	....	13.0	4.5	43.84	1.86
Flour Middlings	73.8	16.9	4.1	52.45	1.15
Shipstuff	65.04	12.7	4.0	42.43	4.65
Barley	76.71	8.4	1.6	63.2	2.10
Buckwheat	61.49	8.1	2.4	45.37	2.81
Buckwheat Feed	....	15.6	4.4	38.2	
Brewers' Dried Grains	56.61	20.0	6.0	25.38	6.8
Distillers' Dried Grains	73.00	22.78	11.6	28.67	11.02
Malt Sprouts	70.59	20.3	1.4	36.37	9.63
Flax Seed	69.92	20.6	29.0	12.76	4.26
Linseed Meal (old process)	71.26	30.2	6.9	27.85	4.16
Linseed Meal (new process)	74.62	31.5	2.4	29.12	6.59
Cotton Seed	59.2	12.5	17.3	12.35	17.63
Cotton Seed Meal	71.61	37.6	9.6	19.19	2.21
Alfalfa Hay	....	10.44	0.31	29.89	10.0
Dried Beet Pulp	70.53	4.1	....	52.29	12.6
Meat Scraps	83.05	66.2	13.4	....	....
Molasses Feed	64.51	10.8	2.2	41.47	6.55

THE CONSTITUENTS OF FEEDING-STUFFS.

In the complete chemical analysis of a feeding-stuff the following determinations are made: moisture, ash, protein, fat, fibre, and nitrogen free extract. The value of a feeding-stuff is generally based on the amount of protein and fat it contains. For that reason these two constituents are often the only ones determined. We are, how-

ever, beginning to realize that while the amount of protein and fat is important, at the same time the carbohydrates are also very important and in many classes of feeding-stuffs form the chief source of value.

MOISTURE.

Water is present to some extent in all classes of feeds. The per cent. in most cases varies between five and fifteen. The amount varies with the nature of the feed, the process of manufacture, and the manner of storage.

ASH.

The ash of a feed is the residue left after burning off the organic matter. It is the inorganic or mineral constituent of the plant. This part of the feed furnishes the material for the bones of the animal.

CRUDE PROTEIN.

By crude protein is meant that portion of a feeding-stuff which contains nitrogen. Nitrogenous feeds build up muscular tissue and are of the greatest importance in determining the value of a feed.

CRUDE FAT.

The term crude fat is rather arbitrarily used to include all the substances of the feed soluble in dry ether or similar solvents. They are the pure fats, such as cottonseed oil, linseed oil, etc., and the waxes, resins, chlorophyl, etc. These latter substances are generally so small in amount that for practical purposes the ether extract of a feed represents the amount of fat which it contains. The fats furnish fuel and are readily digested by the animal.

FIBRE.

The crude fibre in a feeding-stuff is that portion which goes to make up the cell-walls and structural material of the plant. It is fairly indigestible and in general a *high* percentage of crude fibre indicates a *low-grade* feed.

NITROGEN-FREE EXTRACT.

The nitrogen-free extract is that portion of the feed readily extracted by water or dilute acids and composed of non-nitrogenous materials. The principal substances included under the term are the starches and sugars.

CARBOHYDRATES.

The term carbohydrates is sometimes used in speaking of feeding-stuffs. It is generally used to include both crude fibre and nitrogen-free extract. A feeding-stuff which contains small amounts of moisture, ash and crude fibre must be classed as high grade, if digestible. When these constituents are present in small amounts the total amount of the valuable constituents—protein, fat and nitrogen-free extract—must be high.

The Value of a Chemical Examination of Commercial Feeding-stuffs.

The chemical analysis of feeding-stuffs is valuable in many ways, chief of which are the following:

1. It shows whether or not the guarantees of the manufacturer are correct.
2. It protects the buyer against the unscrupulous manufacturer or retailer.
3. It aids the buyer in deciding money values in purchasing feed.

4. It affords a clue as to the nature of the constituents of the feed.

5. It furnishes data for making up any desired feeding ration.

6. It enables the consumer to decide whether it is a useful feed for his particular purpose.

The following definitions are given for the use of the consumer and represent the terms used for the particular feeding-stuffs by the general trade.

General Definitions.

COTTONSEED MEAL.

Cottonseed meal is the meal obtained from the cottonseed kernel after the extraction of the oil. The following standard classification adopted by the Inter-State Cottonseed Crushers' Association will interest the buyer of cottonseed meal:

"*Choice cottonseed meal* must be finely ground, perfectly sound and sweet in odor, yellow, free from excess of lint, and by analysis must contain forty-nine per cent. of combined protein and fat."

"*Prime cottonseed meal* must be finely ground, of sweet odor, reasonably bright in color, yellow, not brown or reddish, free from lint and contain at least forty-six per cent. of combined protein and fat."

Good cottonseed meal must be finely ground, of sweet odor, reasonably bright in color, and by analysis must contain at least forty-three per cent. of combined protein and fat.

LINSEED MEAL.

Linseed meal, oil meal, or flaxseed meal is the residue from the extraction of oil from flaxseed. The oil is ex-

tracted by two processes, known as the old process and the new process. In the old process the oil is simply expressed from the seed by hydraulic pressure. In the new process naphtha or a similar solvent is used to extract the oil. On account of the extraction being more complete when a solvent is used, the new process generally contains less fat than the old process, while they contain about the same per cent. protein.

WHEAT PRODUCTS.

Wheat bran is the coarse outer covering of the wheat berry. It contains much of the fibrous material of the grain, but is rich in protein.

Middlings or shorts. These terms have generally the same meaning in the trade, and are the fine particles of the outer bran as well as considerable starchy matter. They are the intermediate product between bran and flour.

Red dog is a low-grade wheat flour containing the finer particles of bran.*

Wheat mixed feed or shipstuff is a mixture of the by-products from the milling of the wheat berry.*

Mixed feed. The term mixed feed has been so generally used to mean a mixture of wheat products that it is practically a misrepresentation to use the term to mean a mixture of other cereals. A feed carrying less than fifteen per cent. protein and four per cent. fat cannot be a good mixed feed.

CORN PRODUCTS.

Corn bran is the outer coating of the corn kernel.* It has a low feeding value.

Corn and cob meal is the ground whole ear of corn. In this case the cobs are not considered an adulterant.

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* Definitions marked (*) are those adopted by the Association of Feed Control Officials of the United States.

Gluten meal is a product obtained in the manufacture of starch and glucose from corn. It is the flinty portion of the kernel which lies in its outer circumference just beneath the hull.*

Gluten feed is a product obtained in the manufacture of starch and glucose from corn and is a mixture of gluten meal and corn bran to which may be added the residue resulting from the evaporation of the so-called "steep water."*

Corn feed meal is the siftings obtained in the manufacture of cracked corn and table meal made from the whole grain.*

Hominy meal, feed or chop is the bran and germs of the corn kernel and may contain a part of the starchy portion of the kernel.*

DISTILLERY AND BREWERY BY-PRODUCTS.

Distillers' dried grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors.*

Brewers' dried grains are dried barley grains after they have been malted and the soluble sugar and dextrin extracted.

Malt sprouts are the sprouts of the barley grain.*

Alfalfa meal is the entire alfalfa hay ground and does not contain an admixture of ground alfalfa straw or other materials.*

Meat meal is finely ground beef scraps.*

Buckwheat shorts or middlings are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.*

Molasses feeds are generally a mixture of some filler such as oat hulls, oat clippings, flax bran, or grain screenings

* Definitions marked (*) are those adopted by the Association of Feed Control Officials of the United States.

with molasses and a concentrated feed, such as cottonseed meal, brewers' grains, or malt sprouts.

The writers wish to here acknowledge the assistance rendered by Messrs. J. E. Robinson, D. B. Keys, G. F. Lane, and P. L. Gowen in preparing the following analytical data.

Name of Brand.	Manufactured by	Address.	Protein.		Fat.		Crude Fiber Guaranteed.
			Found.	Guaranteed.	Found.	Guaranteed.	
COTTON SEED MEALS							
Cotton Seed Meal	American Milling Co.	Chicago, Ill.	38.96	41.00	8.22	.....	.....
Dove Brand Cotton Seed Meal	F. W. Brodie & Co.	Memphis, Tenn.	37.12	38.50	7.23	6.00	10.00
Owl Brand Cotton Seed Meal	F. W. Brodie & Co.	Memphis, Tenn.	42.47	41.00	8.56	6.00	10.00
Buckeye Prime Cotton Seed Meal	Buckeye Cotton Oil Co.	Cincinnati, Ohio	39.93	39.00	8.46	6.50	10.00
Cotton Seed Meal	S. P. Davis	Little Rock, Ark.	40.24	41.00	6.88	7.00	10.50
Good Luck Brand Cotton Seed Meal	S. P. Davis	Little Rock, Ark.	43.08	41.00	9.40	7.00	10.50
Cotton Seed Meal	Florida Cotton Oil Co.	Jacksonville, Fla.	38.18	38.62	8.71	7.00	.....
Cremo Brand Cotton Seed Meal	Humphrey's Godwin Co.	Memphis, Tenn.	21.71	22.00	4.82	5.00	22.00
Dixie Brand Cotton Seed Meal	Humphrey's Godwin Co.	Memphis, Tenn.	39.93	38.62	8.48	6.00	12.00
Peacock Brand Cotton Seed Meal	Keeton-Kmeger Co.	Atlanta, Ga.	39.31	41.00	6.78	6.00	10.00
Standard Grade Cotton Seed Meal	Macon Manufacturing Co.	Macon, Ga.	39.76	38.61	8.55	.....	.....
"Selden" Cotton Seed Meal	Memphis Cotton Seed Products Co	Memphis, Tenn.	38.79	41.00	9.54	6.00	10.00
Dirigo Cotton Seed Meal	W. Newton Smith	Baltimore, Md.	41.02	41.00	7.96	7.00	10.50
Pioneer Cotton Seed Meal	J. E. Soper	Boston, Mass.	41.42	41.00	8.53	8.00	10.00
Cotton Seed Meal	Weleetka Cotton Oil Co.	Weleetka, Okla.	41.34	.....	9.48	.....	.....
Choice Cotton Seed Meal	Wynnewood Cotton Oil & Mlg. Co.	Wynnewood, Okla.	41.51	.....	7.02	.....	.....
LINSEED MEALS							
Cleveland Flax Meal or Linseed Oil Meal	American Linseed Co.	Chicago, Ill.	38.44	36.00	.88	1.00	7.50
Old Process Oil Meal	American Linseed Co.	New York	35.54	34.00	6.54	5.00	8.00
Pure Old Process Oil Meal	Kelloggs & Miller	Amsterdam, N. Y.	35.38	33 00	8.55	5.00	7.50
Old Process Oil Meal	Guy G. Major Co.	Toledo, Ohio	30.43	30.00	6.26	5.00	10.00
Ground Oil Cake	Wing Linseed Co.	Wing, Minn.	30.02	30.00	7.88	6.00	9.00
MEAT FEEDS							
Ground Beef Scraps	The Am. Agr. Chem. Co.	New York City	43.34	40.00	14.28	5.00	5.00
Bone Meal for Cattle	The Am. Agr. Chem. Co.	New York City	16.90	10.00	8.76	4.00	.....
Bradley's Superior Meat Meal	The Am. Agr. Chem. Co.	New York City	42.12	30.00	9.61	8.00	5.00
Beach's Star Brand Granulated Bone	Beach Soap Co.	Lawrence, Mass.	22.85	25.00	10.05	5.00	.....

MEAT FEEDS—*Continued.*							
Beach's Star Brand Meat and Bone Meal	Beach Soap Co.	Lawrence, Mass.	23.99	30.00	10.00	10.00	6.00
Pure Ground Beef Scraps	Beach Soap Co.	Lawrence, Mass.	36.43	40.00	17.25	20.00	7.00
Bowker's Animal Meal	Bowker Fertilizer Co.	New York and Boston	42.79	40.00	10.78	5.00	15.00
Breck's Poultry and Swine Meal	Joseph Breck & Sons	Boston, Mass.	32.22	32.00	11.84	10.00	.....
Burlington Cooked-Meat Scraps (for poultry)	Burlington Rendering Co.	Burlington, Vt.	41.42	40.00	14.17	8.00	.....
Beef Scraps	John C. Dow Co.	Boston, Mass.	42.51	43.00	15.47	12.00	4.00
Beef Scraps	W. D. Higgins	S. Framingham, Mass.	36.60	30.00	18.68	12.00	.....
Cooked-Meat Scraps	Hinkley Rendering Co.	Somerville, Mass.	38.89	35.00	10.26	8.00	.....
Red Star Brand Fish Scraps	International Glue Co,	Boston, Mass.	44.93	54.70	3.12	2.05	.....
Poultry Food prepaped from cooked meat scraps	Manchester Rendering Co.	Manchester, N. H.	41.37	40.00	9.36	8.00	.....
Marsh's Beef Meat Meal	The George E. Marsh Co.	Lynn, Mass.	42.82	36.00	11.69	8.00	.....
Marsh's Pure Ground Beef Scraps	The George E. Marsh Co.	Lynn, Mass.	46.57	45.00	14.75	10.00	.....
Ground Scraps	Carroll S. Page	Hyde Park, Vt.	45.08	40.00	17.11	25.00	.....
Blue Ribbon Meat Scraps	Park & Pollard Co.	Boston, Mass.	67.28	60.00	15.37	10.00	.....
Cooked-Meat Scraps	Portland Rendering Co.	Portland, Me.	38.65	40.00	17.59	8.00	.....
Sanborn High Grade Meat Meal	H. W. Sanborn (sold by)	Pittsfield, N. H.	47.10	40.00	10.22	8.00	.....
Swift's-Lowell Bone and Meat Meal	Swift's-Lowell Fertilizer Co.	Boston, Mass.	38.27	35.00	12.24	8.00	.....
Swift's-Lowell Cooked Meat Scraps	Swift's-Lowell Fertilizer Co.	Boston, Mass.	44.92	40.00	10.76	8.00	.....
Whitman & Pratt's Pure Beef Scraps	Whitmore & Pratt Rendering Co.	Lowell, Mass.	45.70	45.00	14.88	10.00	.....
Poultry Food	Worcester Rendering Co.	Auburn, Mass.	46.28	40.00	11.17	8.00	.....
MISCELLANEOUS FEEDS.							
Cob Meal	A. Walker & Co.	Henderson, Ky.	2.34	1.95	.30	.38	.50
Shredded Wheat Waste	Shredded Wheat Co.	Niagara Falls, N. Y.	12.24	10.00	1.95	1.50	2.00
Argo Corn Oil Meal	Corn Products Refining Co.	New York City	20.25	19.00	8.38	7.50	15.00
Pure Buckwheat Middlings	Larrowe Milling Co.	Cohocton, N. Y.	16.59	20.00	3.96	4.60	15.00
DISTILLERS' GRAINS							
Dearborn Distillers' Dried Grains	The J. W. Biles Co.	Cincinnati, Ohio	22.72	22.00	8.75	8.00	15.00
Hector Distillers' Dried Grains	The Hottelet Co.	Milwaukee, Wis.	26.05	30.00	9.28	10.00	4.00
Pure Rye Grains	The Hottelet Co.	Milwaukee, Wis.	15.37	16.00	5.47	9.00	14.00
MALT SPROUTS							
Malt Sprouts	H. V. Burns	Buffalo, N. Y.	25.87	23.70	2.40	2.70	14.00
Malt Sprouts	M. G. Rankin & Co.	Milwaukee, Wis.	26.70	25.00	1.91	1.50	17.00
BEET PULPS							
Dried Beet Pulp	The Larrowe Milling Co.	Detroit, Mich.	11.17	8.00	1.57	.50	20.00
Dried Beet Pulp	Michigan Sugar Co.	Caro, Mich.	9.15	8.00	.83	.50	20.00
Dried Beet Pulp	St. Louis Sugar Co.	St. Louis, Mich.	10.25	8.00	.52	.50	20.00

Name of Brand.	Manufactured by	Address.	Protein.		Fat.		Crude Fiber Guaranteed.
			Found.	Guaranteed.	Found.	Guaranteed.	
GLUTEN FEEDS							
Cream of Corn Gluten Feed	American Maize Products Co.	New York	25.44	23.00	3.16	2.53	8.60
Buffalo Gluten Feed	Corn Products Refining Co.	New York	26.37	23.00	3.44	2.50	8.50
Crescent Gluten Feed	Corn Products Refining Co.	New York	23.02	23.00	2.60	2.50	8.50
Diamond Gluten Meal	Corn Products Refining Co.	New York	41.33	40.00	2.07	1.50	4.00
Globe Gluten Feed	Corn Products Refining Co.	New York	24.43	23.00	4.68	2.50	8.50
Clinton Gluten Feed	Clinton Sugar Refining Co.	Clinton, Ia.	24.80	20.00	3.45	3.00	8.00
Jenk's Gluten Feed	Huron Milling Co.	Harbor Beach, Mich.	22.90	23.00	5.14	3.00	8.00
POULTRY MASHES							
Brown's Growing Feed	A. S. Brown	Manchester, N. H.	15.11	13.00	4.83	4.00	.....
Buffeco Poultry Feed	Buffalo Cereal Co.	Buffalo, N. Y.	13.77	15.00	2.88	4.00	5.00
Wirthmore Growing Feed	Chas. M. Cox Co.	Boston, Mass.	11.65	12.00	2.98	5.00	4.50
Wirthmore Poultry Mash Feed	Chas. M. Cox Co.	Boston, Mass.	18.71	17.00	4.18	5.00	9.50
Hen-o-Lay Mash	J. Cushing & Co.	Fitchburg, Mass	13.81	13.00	3.37	3.00	4.00
Grandin's Poultry Mash	D. H. Grandin Milling Co.	Jamestown, N. Y.	16.68	15.00	4.96	4.00	8.00
Wonder Poultry Feed	Flint Mill Co.	Milwaukee, Wis.	19.64	22.00	5.73	4.00	19.64
Greene's Fish Mash for Poultry	Greene Chicken Feed Co.	Marblehead, Mass.	12.72	12.00	3.40	3.00	8.00
Green River Grain Co's Poultry Food	Green River Grain Co.	Greenfield, Mass.	17.78	16.46	4.25	4.25	.....
Purity Poultry Mash	William S. Hills Co.	Boston, Mass.	16.72	16.00	4.81	4.90	18.70
H. O. Company's Poultry Feed	The H. O. Company	Buffalo, N. Y.	15.50	17.00	5.00	5.50	9.00
Husted Laying Mash	Husted Milling Co.	Buffalo, N. Y.	17.22	15.00	5.13	3.00	8.00
Kimball's Dry Mash	C. F. Kimball & Son	Salem Depot, N. H.	17.60	.....	5.62	.....	.....
Dry Mash (Maine State Formula)	W. K. Kimball	Rochester, N. H.	18.70	.....	5.84	.....	.....
Laying Mash	William H. Knox	Dover, N. H.	20.84	19.19	5.23	5.23	.....
Meal Cereal	G. T. Savage Poultry Supply Co.	Boston, Mass.	11.82	11.50	3.83	3.50	.....
Fattening Feed	Park & Pollard Co.	Boston, Mass.	10.03	10.00	3.35	3.50	3.00
Dry Mash Feed	Park & Pollard Co.	Boston, Mass.	21.24	20.00	3.49	3.00	10.00
Growing Feed	Park & Pollard Co.	Boston, Mass.	13.95	10.00	3.82	3.50	5.00
American Poultry Feed	The Quaker Oats Co.	Chicago, Ill.	13.29	12.00	5.02	3.50	9.00
CALF FEEDS							
Blatchford's Calf Meal	Blatchford Calf Meal Factory	Waukegan, Ill.	24.26	25.00	5.25	5.00	5.00

CALF FEEDS—*Continued*							
Greyson's Calf Meal	Great Western Cereal Co.	Chicago, Ill.	26.84	25.00	6.65	5.00	5.00
Triangle Calf Meal	Flint Mill Co.	Milwaukee, Wis.	21.19	22.00	10.10	10.00	.....
Schumaker Calf Meal	Quaker Oats Co.	Chicago, Ill.	19.13	19.00	8.09	8.00	3.00
HOMINY FEEDS							
Buffeco Hominy Feed	Buffalo Cereal Co.	Buffalo, N. Y.	10.50	10.00	8.00	7.00	4.00
Evans Hominy Feed	Evans Milling Co.	Indianapolis, Ind.	10.95	10.00	8.61	7.50	7.00
Choice Steam Cooked Hominy Feed	Miner-Hilliard Milling Co.	Wilkes-Barre, Pa.	11.74	10.00	6.86	7.50	5.00
WHEAT FEEDS							
Acme Feed	Acme Evans Co.	Indianapolis, Ind.	16.92	16.00	4.00	4.00	9.00
No. 2 Bran	Allen & Wheeler Co.	Troy, Ohio.	15.98	14.50	4.09	4.00	9.50
William Tell Bran	The Ansted & Burk Co.	Springfield, Ohio.	15.01	14.00	3.59	3.00	11.50
William Tell Middlings	The Ansted & Burk Co.	Springfield, Ohio.	15.10	14.00	4.45	4.00	7.50
Mixed Feed	The Ansted & Burk Co.	Springfield, Ohio.	16.73	14.50	3.65	3.50	11.50
Fancy Winter Wheat Mixed Feed	E. W. Bailey & Co.	Montpelier, Vt.	17.51	16.00	3.38	3.75	8.50
Fancy White Middlings	Barber Milling Co.	Minneapolis, Minn.	17.73	17.00	5.24	5.00	6.00
Pure Wheat Middlings	Barber Milling Co.	Minneapolis, Minn.	18.52	14.00	6.20	4.00	8.00
Star Bran Flakes	Barber Milling Co.	Minneapolis, Minn.	15.90	13.00	4.20	4.00	10.00
White Satin Mixed Feed	Barber Milling Co.	Minneapolis, Minn.	17.38	16.00	4.41	4.50	9.00
Winona Fancy Flaky Bran	Bay State Milling Co.	Winona, Minn.	15.50	15.00	4.90	4.00	11.00
Badger Standard Middlings	Berger-Crittenden Milling Co.	Milwaukee, Wis.	17.34	17.00	5.30	4.50	3.50
Choice Flour Middlings	L. Christian & Co	Minneapolis, Minn.	17.95	17.50	5.25	5.15	5.98
Claro Middlings	Claro Milling Co.	Waseca, Minn.	17.17	15.00	5.25	3.00	8.00
Waumbeck Mixed Feed	Commercial Milling Co.	Detroit, Mich.	14.93	14.61	5.61	4.55	.....
Winter Wheat Middlings	William A. Coombs Milling Co.	Cold Water, Mich.	16.33	15.00	4.18	3.00	9.00
Winter Wheat Bran	William A. Coombs Milling Co.	Cold Water, Mich.	15.30	14.00	3.40	3.00	10.00
Winter Wheat Mixed Feed	William A. Coombs Milling Co.	Cold Water, Mich.	17.52	15.00	4.63	3.00	10.00
Regent Fancy Mixed Feed	Chas. M. Cox Co.	Boston, Mass.	15.64	15.00	4.58	3.00	10.00
Wirthmore Middlings	Chas. M. Cox Co.	Boston, Mass.	17.12	15.00	4.00	4.00	5.00
Wirthmore Mixed Feed	Chas. M. Cox Co.	Boston, Mass.	17.03	16.00	4.79	4.00	7.00
Splendid Heavy Mixed Feed	Detroit Milling Co.	Detroit, Mich.	16.11	15.00	4.80	4.60	.. ..
Duluth Imperial Bran	Duluth-Superior Milling Co.	Duluth, Minn.	15.06	14.50	4.22	4.00	11.25
Boston Mixed Feed	Duluth-Superior Milling Co.	Duluth, Minn.	16.03	16.00	5.31	4.50	8.50
Pure Bran	Duluth-Superior Milling Co.	Duluth, Minn.	14.54	14.50	4.90	4.40	10.50
Pure Wheat Shorts	Dwight Flour Mills.	Minneapolis, Minn.	17.43	16.00	4.84	5.00	11.00
Eaco Winged Horse Mixed Feed	Everett, Aughenbaugh & Co.	Waseca, Minn.	17.34	15.00	4.99	3.00	12.00
Lucky Spring Flour Middlings	Federal Milling Co.	Lockport, N. Y.	18.74	15.00	5.30	4.00	10.00
Lucky Spring Mixed Feed	Federal Milling Co.	Lockport, N. Y.	17.43	14.00	4.64	4.00	10.00
Lucky Winter Bran	Federal Milling Co.	Lockport, N. Y.	15.17	13.50	3.72	3.50	10.00
Sphinx Spring Fancy Middlings	Federal Milling Co.	Lockport, N. Y.	16.64	17.00	4.91	3.00	8.00
Pure Wheat Standard Middlings	Gannon Valley Milling Co.	Minneapolis, Minn.	16.00	14.00	5.26	4.00	.....
Xtragood Mixed Feed	Griswold & McKinnon	St. Johnsbury, Vt.	16.51	16.00	4.61	4.00	7.50

Name of Brand.	Manufactured by	Address.	Protein.		Fat.		Crude Fiber Guaranteed.
			Found.	Guaranteed.	Found.	Guaranteed.	
WHEAT FEEDS—*Continued*							
Gwinn's Mixed Feed	The Gwinn Milling Co	Columbus, Ohio	16.82	16.39	4.59	4.50	7.00
Gwinn's Wheat Middlings	The Gwinn Milling Co	Columbus, Ohio	18.04	17.00	5.86	6.00	6.00
Soft Winter Mixed Feed	H. L. Halliday Milling Co	Cairo, Ill	16.37	14.50	4.59	4.00	8.00
Purity Mixed Feed	William S. Hills Co	Boston, Mass	16.20	15.00	4.00	4.00	10.00
Pure Wheat Bran	John Hoffer Flouring Mills Co	Steelton, Pa	15.98		4.29		
Pure Wheat Middlings	John Hoffer Flouring Mills Co	Steelton, Pa	16.82		4.92		
Pure Wheat Shorts	John Hoffer Flouring Mills Co	Steelton, Pa	17.17		4.77		
Winter Sunshine Mixed Feed	Hunter-Robinson-Wenz	St. Louis, Mo	14.75	14.50	4.20	4.00	8.00
Standard Fine Middlings	Hubbard Milling Co	Monkato, Minn	17.60	14.50	5.43	5.10	8.50
Mixed Feed	Huron Milling Co	Harbor Beach, Mich	15.37	12.18	4.74	4.60	5.85
Middlings	Huron Milling Co	Harbor Beach, Mich	14.45	15.12	3.48	3.60	2.33
*Sterling Mixed Feed	Indiana Milling Co	Terre Haute, Ind	10.20	9.80	3.35	2.75	14.00
Eastern Mill Feed, Pure Wheat Bran and Flour Mixed Feed	Kemper Mill & Elevator Co	Kansas City, Mo	18.47	17.00	3.96	3.50	8.00
Snow Flake Mixed Feed	Lawrenceburg Roller Mills Co	Lawrenceburg, Ind	16.64	15.20	4.16	4.30	8.00
Bran	Maple Leaf Mfg. Co. (Limited)	Canada	16.38		4.63		
Powerful Middlings	A. McCrillis & Son Co	Boston, Mass	17.30	15.75	5.39	5.25	10.00
*Connecticut Mixed Feed	Meech & Stoddard	Middletown, Conn	10.94	9.80	3.05	2.75	14.00
Osota Mixed Feed	National Milling Co	Toledo, Ohio	17.03	17.00	5.13	4.50	8.00
Powerful Standard Middlings	The New England Flour Co	Boston, Mass	16.25	15.00	5.53	4.50	8.00
Seal of Minnesota Bran	New Prague Flouring Mills Co	New Prague, Minn	14.87	13.50	4.87	4.00	12 50
Seal of Minnesota Standard Middlings	New Prague Flouring Mills Co	New Prague, Minn	18.70	17.00	6.15	5.07	6.05
Coarse Bran	New Ulin Roller Mill Co	New Ulin, Minn	17.40	14.00	4.51	4.50	8.00
Planet Feed	Northwestern Consol. Milling Co	Minneapolis, Minn	17.25	15.00	4.89	4.00	8.00
Pure Wheat Bran	Northwestern Consol. Milling Co	Minneapolis, Minn	16.25	14.50	4.20	4.00	11.00
Pure Wheat Middlings	Northwestern Consol. Milling Co	Minneapolis, Minn	16.38	15.00	5.40	4.50	10.00
XXX Comet Pure Wheat Middlings	Northwestern Consol. Milling Co	Minneapolis, Minn	17.34	16.50	4.54	4.00	3.00
Empire Fancy Heavy Mixed Feed	Northwest Mills Co	Winona, Minn	15.32	15.00	4.00	3.00	10.00
New Era Middlings	Noyes & Colby	Boston, Mass	16.68	15.00	5.13	4.00	
Tekonsha Mills Pure Wheat Bran	A. H. Randall Milling Co	Tekonsha, Mich	14.95	14.00	3.59	3.00	13.00
Pillsbury's B. Middlings	Pillsbury Milling Co	Minneapolis, Minn	17.07	15.00	4.93	4.50	8.00

*Adulterated with ground corn cob and a little corn.

WHEAT FEEDS—*Continued.*							
Pillsbury's B. Middlings	Pillsbury Milling Co	Minneapolis, Minn	16.51	15.00	5.22	4.50	8.00
Pillsbury's Middlings	Pillsbury Milling Co	Minneapolis, Minn	15.78	15.00	5.24	4.50	6.00
Pillsbury's Fancy Mixed Feed	Pillsbury Milling Co	Minneapolis, Minn	16.27	16.00	4.51	4.50	8.00
Pillsbury's Pure Unadulterated B. Wheat Middlings	Pillsbury Milling Co	Minneapolis, Minn	15.98	15.00	5.15	4.50	6.00
Pillsbury's Pure and Unadulterated Hard Wheat Bran	Pillsbury Milling Co	Minneapolis, Minn	15.30	14.50	4.07	4.00	11.00
Pillsbury's XX Daisy Middlings	Pillsbury Milling Co	Minneapolis, Minn	18.67	15.00	4.75	4.50	4.00
Pillsbury's XX Daisy Pure Wheat Product	Pillsbury Milling Co	Minneapolis, Minn	18.22	16.00	4.78	4.50	4.00
Go Far Wheat Feed	Red Wing Milling Co	Red Wing, Minn	17.31	16.50	4.77	4.10	8.50
Regular Wheat Feed	Russell Flour Co	Albany, N. Y	16.96	15.00	4.83	4.50	10.00
Bran	Russell-Miller Milling Co	Minneapolis, Minn	17.60	13.00	4.31	4.00	11.00
Flour Middlings	Russell-Miller Milling Co	Minneapolis, Minn	17.16	16.00	4.00	5.00	6.00
Occident Mixed Feed	Russell-Miller Milling Co	Minneapolis, Minn	16.86	15.00	4.52	4.50	10.00
Regular Wheat Feed	Russell-Miller Milling Co	Minneapolis, Minn	17.03	15.00	4.83	4.50	10.00
Standard Middlings	Russell-Miller Milling Co	Minneapolis, Minn	17.52	15.00	5.64	4.00	9.00
Sleepy Eye Milling Co's Middlings	Sleepy Eye Milling Co	Sleepy Eye, Minn	18.47	16.65	5.34	4.59	8.95
Wabash Mixed Feed	Spark's Milling Co	Terre Haute, Ind	16.02	14.00	4.12	3.50	8.00
Bran	St. Albans Grain Co	St. Albans, Vt	14.49	15.50	4.16	5.00	9.00
Hygrade Mixed Feed	St. Albans Grain Co	St. Albans, Vt	16.11	16.00	4.83	4.00	.....
Red Dog Middlings	Star & Crescent Milling Co	Chicago, Ill	17.52	16.50	4.17	4.00	8.00
Middlings	F. W. Stock & Co	Hillsdale, Mich	16.77	.....	4.98	.....	.....
Monarch Mixed Bran and Middlings	F. W. Stock & Co	Hillsdale, Mich	16.12	.....	4.75	.....	.....
Superior Mixed Bran and Middlings and Flour	F. W. Stock & Co	Hillsdale, Mich	17.42	.....	4.03	.....	.....
Pure Wheat Country Middlings	W. H. Stokes Milling Co	Watertown, S. D	16.75	16.50	5.25	5.00	5.59
Pure Wheat Shorts	W. H. Stokes Milling Co	Watertown, S. D	16.87	16.50	5.37	5.00	5.59
Stott's Climax Middlings	David Stott	Detroit, Mich	17.52	18.00	5.20	5.00	8.00
Stott's Fine White Middlings	David Stott	Detroit, Mich	15.54	16.00	4.50	5.00	8.00
Stott's Heavy Pure Mixed Wheat Feed	David Stott	Detroit, Mich	16.03	16.00	4.40	5.00	9.00
Stott's Honest Mixed Feed	David Stott	Detroit, Mich	15.63	16.50	4.51	4.50	9.00
Stott's Mixed Feed	David Stott	Detroit, Mich	16.82	18.00	4.61	5.00	.....
Stott's Pennant Pure Winter Wheat Middlings	David Stott	Detroit, Mich	17.02	17.00	5.01	5.50	8.00
Stott's Pure Spring Wheat Bran	David Stott	Detroit, Mich	16.95	16.00	4.55	4.50	11.00
Bran	Stratton & Co	Concord, N. H	16.14	.....	4.24	.....	.....
Mixed Feed	Stratton & Co	Concord, N. H	16.25	.....	4.12	.....	.....
Stratton & Co.'s Middlings	Stratton & Co	Concord, N. H	16.20	.....	4.26	.....	.....
Pure Wheat Red Dog Flour	Tennant & Hoyt Co	Lake City, Minn	20.91	14.00	3.74	3.00	.....
Pure Wheat Bran	Tennant & Hoyt Co	Lake City, Minn	16.20	13.20	5.02	4.90	13.10
Mixed Wheat Feed	Thornton & Chester Milling Co	Buffalo, N. Y	16.03	11.00	4.70	3.00	.....

Name of Brand.	Manufactured by	Address.	Protein.		Fat.		Crude Fiber Guaranteed.
			Found.	Guaranteed.	Found.	Guaranteed.	
WHEAT FEEDS.—*Continued*							
Wheat Bran	George Urban Milling Co.	Buffalo, N. Y.	15.60	15.00	4.21	4.00	11.00
Choice Wheat Middlings	Valley City Milling Co.	Grand Rapids, Mich.	17.08	16.81	4.63	3.01	6.33
Farmers' Favorite Choice Wheat Bran	Valley City Milling Co.	Grand Rapids, Mich.	16.21	17.75	1.25	3.43	10.93
Farmers' Favorite Winter Wheat Mixed Corn Feed	Valley City Milling Co.	Grand Rapids, Mich.	16.37	11.74	3.58	4.25	7.50
Vineo Winter Wheat Bran	Valley City Milling Co.	Grand Rapids, Mich.	15.72	11.38	3.64	5.00	10.00
Voigt's Pure Middlings	Voigt Milling Co.	Grand Rapids, Mich.	16.46	.....	4.45	.....	.....
Voigt's Pure Winter Wheat Bran	Voigt Milling Co.	Grand Rapids, Mich.	15.42	11.87	3.45	3.95	10.40
Big John Bran	Wabasha Roller Mills Co.	Wabasha, Minn.	15.85	16.00	4.85	4.62	10.44
Mill Run Bran Mixed Feed	Waggoner-Gates Milling Co.	Independence, Mo	15.90	15.00	4.09	4.00	9.00
Washburn-Crosby's Adrian Flour Middlings	Washburn-Crosby Co.	Minneapolis, Minn.	19.09	17.00	5.75	5.00	6.00
Washburn-Crosby's Adrian Flour	Washburn-Crosby Co.	Minneapolis, Minn.	17.60	17.00	5.10	5.00	4.00
Washburn-Crosby's Hard Wheat Superior Mixed Feed	Washburn-Crosby Co.	Minneapolis, Minn.	16.51	16.00	4.53	4.50	9.00
Washburn-Crosby's Flour Middlings	Washburn-Crosby Co.	Minneapolis, Minn.	17.17	17.00	4.86	5.00	6.00
Washburn-Crosby's Pure HardWheat Coarse Bran	Washburn-Crosby Co.	Minneapolis, Minn.	14.57	14.50	4.09	4.00	11.00
Washburn-Crosby's Pure HardWheat Flour Middlings	Washburn-Crosby Co.	Minneapolis, Minn.	17.12	17.00	4.86	5.00	6.00
Washburn-Crosby's Pure HardWheat Standard Middlings	Washburn-Crosby Co.	Minneapolis, Minn.	16.20	15.00	5.14	4.00	8.00
Washburn-Crosby Co.'s Rye Middlings	Washburn-Crosby Co.	Minneapolis, Minn.	17.03	14.00	3.69	3.00	6.00
Bran	Western Canada Flour Mills Co.	Canada	15.42	16.82	4.80	5.50	10.86
Kent Mixed Feed	The Williams Bros. Co.	Kent, Ohio	16.25	12.00	4.09	2.00	9.00
COMPOUNDED FEEDS							
Ajax Flakes	Ajax Milling and Feed Co.	New York and Buffalo	30.35	30.00	12.85	11.00	14.00
Dairy Sucrene Feed	American Milling Co.	Chicago, Ill.	16.82	16.50	3.81	3.50	12.00
Sucrene Alfalfa Horse and Mule Feed	American Milling Co.	Chicago, Ill.	13.62	11.00	3.94	3.50	12.00

COMPOUNDED FEEDS—*Continued.*							
Biles' Ready Dairy Ration	J. W. Biles Co.	Cincinnati, Ohio	25.31	24.00	7.20	7.00	9.00
Fourex Distillers' Dried Grains	J. W Biles Co.	Cincinnati, Ohio	29.03	31.00	10.73	12.00	13.00
Ubico Union Grains	J. W. Biles Co.	Cincinnati, Ohio	23.94	24.00	7.40	7.00	9.00
Buffeco Creamery Feed	Buffalo Cereal Co.	Buffalo, N. Y.	20.53	18.00	5.49	4.00	8.00
Buffeco Horse Feed	Buffalo Cereal Co.	Buffalo, N. Y.	12.39	10.00	4.45	4.00	8.00
Buffeco Stock Feed	Buffalo Cereal Co.	Buffalo, N. Y.	10.29	8.00	5.71	4.00	9.00
Unicorn Dairy Ration	Chapin & Co.	Milwaukee and Buffalo	28.85	26.00	6.04	5.50	10.00
Unicorn Dairy Ration	Chapin & Co.	Milwaukee and Buffalo	26.01	26.00	6.23	6.00	9.00
Henkel's Fine White Feed	The Commercial Milling Co.	Detroit, Mich.	15.83	15.00	3.57	3.50	4.00
Charlestock Feed	Charles M. Cox Co.	Boston, Mass.	7.45	6.00	3.42	3.00	.....
Wirthmore Balanced Ration for Milch Cows	Charles M. Cox Co.	Boston, Mass.	25.55	25.50	4.66	5.00	9.50
Wirthmore Balanced Ration Feed	Charles M. Cox Co.	Boston, Mass.	27.15	26.00	5.00	5.00	9.50
Wirthmore Stock Feed	Charles M. Cox Co.	Boston, Mass.	10.37	9.00	7.59	4.00	7.00
Grandin's Stock Food	D. H. Grandin Milling Co.	Jamestown, N. Y.	8.76	*10.00	3.55	4.40	8.21
Boss Feed	The Great Western Cereal Co.	Chicago, Ill.	7.85	8.00	3.58	3.50	11.00
Daisy Dairy Feed	The Great Western Cereal Co.	Chicago, Ill.	15.82	14.00	3.17	3.00	11.00
Gwinn's Horse and Mule Feed	Gwinn Milling Co.	Columbus, Ohio	10.25	10.00	4.80	5.00	6.00
Holstein Sugar Feed	F. W. Goeke & Co.	St. Louis, Mo.	12.78	15.00	3.21	3.00	15.00
Xtragood Stock Feed	Griswold & Makinnon	St. Johnsbury, Vt.	10.92	10.00	3.94	3.25	.....
Haskell's Stock Feed	W. H. Haskell & Co.	Toledo, Ohio	9.68	8.00	6.56	4.00	8.00
Purity Milk Maker	William S. Hills Co.	Boston, Mass.	24.21	24.00	5.90	7.00	10.00
Purity Stock Feed	William S. Hills Co.	Boston, Mass.	8.76	8.50	3.36	3.00	5.00
Algrane Milk Feed	H. O. Company.	Buffalo, N. Y.	15.94	14.00	4.25	4.00	9.00
Husted Germaline	Husted Milling Co.	Buffalo, N. Y.	9.75	9.00	4.53	3.00	4.00
Husted Molasses Feed	Husted Milling Co.	Buffalo, N. Y.	20.54	18.00	4.79	4.00	9.00
Husted Stock Feed	Husted Milling Co.	Buffalo, N. Y.	10.54	8.00	6.11	4.00	9.00
Husted Yellow Provender	Husted Milling Co.	Buffalo, N. Y.	8.94	7.00	5.05	4.00	9.00
Monarch Chop Feed	Husted Milling Co.	Buffalo, N. Y.	10.28	7.50	5.43	3.50	9.00
Corn, Oats and Barley Chop	The Imperial Grain and Milling Co	Toledo, Ohio	9.15	8.90	3.75	3.70	11.75
Dairy Mixed Feed	Henry Jennings, Boston (Dis.)	Boston, Mass.	10.95	13.00	2.33	3.00	.....
H. J. Flax Feed	Henry Jennings, Boston (Dis.)	Boston, Mass.	15.63	16.00	12.43	14.00	.....
Brooks' Fancy Corn and Oat Stock Feed	A. H. McLeod Milling Co.	St. Johnsbury, Vt.	8.63	7.63	3.79	3.00	8.50
Park City Stock Feed	The Mollett Grain and Milling Co.	McClure, Ohio	9.72	.....	5.50	.....	.....
Sugarota Dairy Feed	Northwest Mills Co.	Winona, Minn.	16.64	16.50	4.42	3.50	14.00
New Era Stock Feed	Noyes & Colby.	Boston, Mass.	10.05	10.00	6.94	4.00	.....
Empire State Dairy Feed	J. D. Page & Co.	Syracuse, N. Y.	30.34	29.00	11.30	12.00	12.00
Blue Ribbon Dairy Feed	Quaker Oats Co.	Chicago.	25.09	25.00	4.57	4.00	9.00
Quaker Dairy Molasses Feed	Quaker Oats Co.	Chicago.	15.42	16.00	4.00	3.50	14.00

* Later reduced to 8.50.

Name of Brand.	Manufactured by	Address.	Protein.		Fat.		Crude Fiber Guaranteed.
			Found.	Guaranteed.	Found.	Guaranteed.	
COMPOUNDED FEEDS—*Continued.*							
Schumacher Stock Feed	Quaker Oats Co.	Chicago, Ill.	11.34	10.00	3.95	3.25	10.00
Victor Feed	Quaker Oats Co.	Chicago, Ill.	8.02	8.00	3.67	3.00	12.00
White Diamond Feed	Quaker Oats Co.	Chicago, Ill.	9.45	8.00	3.54	3.25	8.00
Purina Feed	Ralston Purina Co.	St. Louis, Mo.	12.87	12.50	4.01	4.00	8.90
Stott's Winner Chop Feed	David Stott	Detroit, Mich.	10.99	8.00	6.56	4.50	10.00
Stock Feed	H. K. Webster Co.	Lawrence, Mass.	9.72	8.00	5.22	4.00	9.00
Cut Alfalfa	Park & Pollard Co.	Boston, Mass.	14.01	.....	1.02	.....	.....
Banner Brand Clover	Joseph Breck & Sons	Boston, Mass.	11.74	12.00	2.16	2.00	.....
Ames Alfalfa Meal	American Milling Co.	Chicago, Ill.	15.50	13.00	1.73	2.00	25.00
Alfalfa Meal	The Albert Dickinson Co.	Chicago, Ill.	13.72	12.00	1.45	1.00	35.00
Choice Cut Clover	Thomas W. Emerson Co.	Boston, Mass.	10.50	10.00	1.63	1.00	.....
Choice Colorado Alfalfa Meal	Kemper Mill and Elevator Co.	Kansas City, Mo.	14.25	13.50	1.53	1.25	30.00
G. W. Alfalfa Meal	The Great Western Cereal Co.	Chicago, Ill.	13.04	12.00	1.72	2.00	24.00

The following Brands of Licensed Feeding Stuffs were not found by the Inspector :

Name of Brand.	Manufacturer.	Address.	Protein.	Fat.	Fiber.
			Guaranteed.		
Zenith Stock Feed	Husted Milling Co.	Buffalo, N. Y.	10.00	4.00	9.00
Mayflower Stock Feed	Husted Milling Co.	Buffalo, N. Y.	7.50	3.50	9.00
Husted Dairy Feed	Husted Milling Co.	Buffalo, N. Y.	20.00	4.00	9.00
Bone and Meat Meal	Hinkley Rendering Co.	Somerville, Mass.	35.00	8.00	.....
Anchor Bran	Kemper Mill and Elevator Co.	Kansas City, Mo.	14.50	4.00	9.50
Anchor Mixed Feed	Kemper Mill and Elevator Co.	Kansas City, Mo.	16.00	4.00	5.00
Crescent Mixed Feed	Kemper Mill and Elevator Co.	Kansas City, Mo.	16.00	4.00	5.00

Choice Cotton Seed Meal	Kemper Mill & Elevator Co	Kansas City	41.00	7.50	10.00
Bone and Meat Meal	Manchester Rendering Co	Manchester, N. H	35.80	8.00	.....
Pennant Mixed Feed	National Milling Co	Toledo, Ohio	16.00	3.75	8.50
Powerful Mixed Feed	New England Flour Co	Boston, Mass	15.00	4.50	10.00
Powerful Standard Bran	New England Flour Co	Boston, Mass	14.50	4.00	11.00
Pure Wheat Bran Middlings	Northwestern Consol. Milling Co	Minneapolis, Minn	15.50	4.50	6.00
Mixed Feed	Northwestern Consol. Milling Co	Minneapolis, Minn	15.00	4.50	10.00
Intermediate Chick Feed	Park & Pollard Co	Boston, Mass	10.00	3.50	5.00
Grittless Chick Feed	Park & Pollard Co	Boston, Mass	10.00	2.77	5.00
Pratt's Baby Chick Feed	Pratt's Baby Chick Feed	Philadelphia, Pa	13.00	4.75	3.00
Sterling Scratch Feed	Quaker Oats Co	Chicago, Ill	10.00	2.50	5.00
Buckeye Mixed Feed	Quaker Oats Co	Chicago, Ill	13.00	4.00	8.00
Green Cross Horse Feed	Quaker Oats Co	Chicago, Ill	10.00	3.25	10.50
Daisy Dairy Feed	Quaker Oats Co	Chicago, Ill	10.00	4.00	10.00
White Diamond Feed	Quaker Oats Co	Chicago, Ill	8.00	3.00	9.00
C. O. and B. Feed	Quaker Oats Co	Chicago, Ill	10.00	3.25	10.00
Trojan Bran	Allen & Wheeler	Troy, Ohio	14.50	4.00	9.50
Trojan Mixed Feed	Allen & Wheeler	Troy, Ohio	14.50	4.00	8.00
Trojan Middlings	Allen & Wheeler	Troy, Ohio	15.00	4.00	6.00
Choice Cotton Seed Meal	American Cotton Oil Co	New York	11.00	9.00	10.50
Prime Cotton Seed Meal	American Cotton Oil Co	New York	38.61	8.00	11.50
Bowker's Beef Scraps	Bowker Fertilizer Co	Boston, Mass	10.00	5.00	5.00
Buffeeo Dairy Feed	Buffalo Cereal Co	Buffalo, N. Y	12.00	3.00	8.00
Buffeeo Chop Feed	Buffalo Cereal Co	Buffalo, N. Y	7.00	3.00	9.00
Green Diamond Choice Cottonseed Meal	Chapin & Co	Hammond, Ind	41.00	8.00	10.00
Green Diamond Hominy Meal	Chapin & Co	Hammond, Ind	10.00	7.00	5.00
Triangle Calf Feed	Chapin & Co	Hammond, Ind	10.00	8.00	.....
Wirthmore Hominy Feed	C. M. Cox & Co	Boston, Mass	9.50	7.50	5.00
Bran	C. M. Cox & Co	Boston, Mass	15.50	4.00	9.00
Columbia Mixed Feed	C. M. Cox & Co	Boston, Mass	16.00	4.00	9.00
Empire State Dairy Feed	Clark Bros. & Co	Peoria, Ill	28.00	10.00	12.50
Winkel's Coarse Brown Feed	Commercial Milling Co	Detroit, Mich	15.00	4.00	8.00
Winkel's Chop Feed	Commercial Milling Co	Detroit, Mich	9.00	5.00	8.00
Winkel's Mixed Feed	Commercial Milling Co	Detroit, Mich	15.50	4.50	8.00
Winkel's Bran	Commercial Milling Co	Detroit, Mich	11.00	3.00	14.00
Grafton Mixed Feed	Grafton Roller Mill Co	Grafton, N. D	15.50	6.10	11.90
Greene's Old Fashioned Meat Scraps	Greene Chick Feed Co	Marblehead, Mass	40.00	10.00	.....
H. O. Co.'s Chick Feed	H. O. Company	Buffalo, N. Y	12.00	3.00	9.00
Algrane Horse Feed	H. O. Company	Buffalo, N. Y	11.00	4.00	9.00
New England Stock Feed	H. O. Company	Buffalo, N. Y	9.00	4.00	9.00
H. O. Co.'s Algrane Scratch Feed	H. O. Company	Buffalo, N. Y	11.00	3.50	9.00
Wyandotte Scratch Feed	Ross Bros. Co	Worcester, Mass	12.00	3.00	.....
Wyandotte Chick Feed	Ross Bros. Co	Worcester, Mass	8.25	2.25	.....
Red Dog Flour	Russell-Miller Milling Co	Minneapolis, Minn	10.00	4.50	6.00

Name of Brand.	Manufacturer.	Address.	Protein.	Fat.	Fiber.
			Guaranteed.		
Red Dog Flour	Russell-Miller Milling Co.	Minneapolis, Minn.	13.00	4.00	11.00
Prime Cotton Seed Meal	J. E. Soper Co.	Boston, Mass.	38.50	5.00	10.00
Try Me Mixed Feed	Spooks Milling Co.	Alton, Ill	16 00	4.50	8.00
Gold Mine Mixed Feed	Sheffield King Milling Co.	Minneapolis, Minn	15.90	4.90	8.90
Middlings	George Urban Milling Co.	Buffalo, N. Y.	15.00	5.00	8.00
Mixed Feed	George Urban Milling Co.	Buffalo, N. Y.	16.00	4.00	10.50
Star Feed	Toledo Elevator Co.	Indianapolis, Ind.	7.00	5.50	12.50

Brands of licensed Feeding Stuffs which were found but not analyzed. These feeds consisted of a mixture of whole or whole and cracked grains.

Name of Brand.	Manufacturer.	Address.	Protein.	Fat.	Fiber.
			Guaranteed.		
Schumacher Scratching Grains	The Quaker Oats Co	Chicago	10.00	2 50	5.00
Scratch Feed	Park & Pollard Co	Boston.	10.00	3.50	5.00
Red Ribbon Chick Feed	Park & Pollard Co	Boston...	10.00	3.50	5.00
Wirthmore Gritless Intermediate Chick Feed	Charles M. Cox Co.	Boston.	11.00	3.00	3.50
Wirthmore Scratch Feed	Charles M. Cox Co	Boston.	11.00	3.00	5.00

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DATE DUE

A fine of Two Cents will be charged for each day the book is kept overtime.

FEB 1 1 '59			
DEC 7 '60			
JAN 1 '90			

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